AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111
Serial Number: 09/887,595
Filing Date: June 22, 2001
Title: NOISE DEPENDENT FILTER
Assignee: Intel Corporation

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## IN THE CLAIMS

Please amend the claims as follows:

1. (Original)   A communication device for use in a wireless communication system comprising:

a receiver front end to receive a communication signal from a wireless channel;

a noise classification unit to determine a present noise classification for the wireless channel based on the received communication signal;

an adjustable noise flattening filter to filter the communication signal received from the wireless channel to generate a filtered signal, said adjustable noise flattening filter having a filter response that is responsive to the noise classification determined by the noise classification unit; and

an equalizer to process the filtered signal generated by the adjustable noise flattening filter.

2. (Original)   The communication device of claim 1, comprising:

a noise estimation unit to determine a noise estimate for the wireless channel using the received communication signal, wherein said noise classification unit uses said noise estimate to determine said present noise classification.

3. (Original)   The communication device of claim 2, comprising:

a channel estimation unit to determine an estimated channel response of the wireless channel using the received communication signal, wherein said noise estimation unit uses the estimated channel response to determine said noise estimate.

4. (Original)   The communication device of claim 1, wherein:

said adjustable noise flattening filter includes a plurality of individual filters that each have a different filter response.

5. (Original)    The communication device of claim 4, wherein:

      said plurality of individual filters each correspond to a different noise classification.

6. (Original)    The communication device of claim 4, wherein:

      said adjustable noise flattening filter includes an input for receiving a signal to be filtered, an output for outputting a filtered signal, and a switch for selectively switching one of said plurality of individual filters into a flow path between said input and said output in response to the noise classification determined by the noise classification unit.

7. (Original)    The communication device of claim 1, wherein:

      said adjustable noise flattening filter includes a single filter having a modifiable filter response.

8. (Original)    A communication device comprising:

      means for receiving a communication signal from a wireless communication channel;

      means for estimating a noise spectrum within the wireless communication channel using the communication signal;

      means for selecting a noise flattening filter response based on said noise spectrum estimated by said means for estimating; and

      means for filtering the communication signal using the filter response selected by said means for selecting.

9. (Original)    The communication device of claim 8, wherein:

      said means for estimating a noise spectrum uses an estimated channel response to estimate said noise spectrum.

10. (Original)  The communication device of claim 8, wherein:

      said means for filtering includes a bank of individual filters and a switch for directing said communication signal to one of said individual filters based on a control signal.

11. (Original)  The communication device of claim 8, wherein:

said means for selecting a noise flattening filter response includes means for calculating filtered noise powers using said noise spectrum estimated by said means for estimating.

12. (Original)  The communication device of claim 8, wherein:

said means for selecting a noise flattening filter response includes means for selecting one of a finite number of predetermined filter responses based on said noise spectrum estimated by said means for estimating.

13. (Currently Amended)  A method for processing a communication signal comprising:

receiving a communication signal from a wireless channel;

estimating a noise spectrum within said wireless channel using said communication signal;

selecting one of a plurality of filter responses to filter said communication signal based on said estimated noise spectrum;

filtering said communication signal using said selected filter response to generate a filtered communication signal having a noise component that is flatter than a noise component of said communication signal; and

applying said filtered communication signal to the input of an equalizer.

14. (Original)  The method of claim 13, wherein:

estimating a noise spectrum includes:

convolving an estimated channel response with data known to be within said communication signal to generate an estimated signal; and

subtracting said estimated signal from the received communication signal to generate said estimated noise spectrum.

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15. (Original)  The method of claim 13, wherein:

selecting one of a plurality of filter responses includes:

analyzing said estimated noise spectrum to determine a noise classification for noise within the channel; and

generating a filter select signal based upon said noise classification.

16. (Original)  The method of claim 15, wherein:

filtering said communication signal includes directing said communication signal to the input of one filter within a bank of filters based on said filter select signal.

17. (Original)  The method of claim 13, wherein:

selecting one of a plurality of filter responses includes choosing a filter response that will most effectively flatten noise within said communication signal.

18. (Canceled)

19. (Original)  The method of claim 13, wherein:

said plurality of filter responses includes at least one high pass filter response and at least one low pass filter response.

20. (Original)  A computer readable medium having program instructions stored thereon for implementing a method for filtering a communication signal when executed within a digital processing device, said method comprising:

analyzing a communication signal received from a wireless communication channel to determine a class of noise in the wireless communication channel;

selecting one of a plurality of filter responses to filter said communication signal based on said class of noise; and

filtering said communication signal using said selected filter response.

21. (Original)  The computer readable medium of claim 20, wherein:

analyzing a communication signal includes estimating a noise spectrum within said channel.

22. (Original)  The computer readable medium of claim 21, wherein:

analyzing a communication signal includes calculating filtered noise powers using said estimated noise spectrum.

23. (Original)  The computer readable medium of claim 22, wherein:

analyzing a communication signal includes comparing said filtered noise powers to one another.

24. (Original)  The computer readable medium of claim 20, wherein:

selecting one of a plurality of filter responses includes choosing a filter response that will most effectively flatten noise within said communication signal.